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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/816,770	03/26/2001	Tsuyoshi Kitahara	Q63724	4825

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EXAMINER

NGUYEN, LAM S

ART UNIT PAPER NUMBER

2853

DATE MAILED: 02/13/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/816,770

Applicant(s)

KITAHARA, TSUYOSHI

Examiner

LAM S NGUYEN

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) ____ is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings Fig.3, Fig.5, Fig.6, Fig.7, Fig.8A-B, Fig.9, and Fig.10A-B are objected to because of non-English commentations. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 5 rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The claim is written in an uncompleted sentence.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 3, 4, 6, 7, 8, 9, 10, 13, 14, and 15 rejected under 35 U.S.C. 103(a) as being unpatentable over Kitahara et al. (EP0827838) in view of Barbehenn et al. (U.S. 5363134).

Kitahara et al. discloses a method of jetting liquid droplets or a liquid jetting apparatus, comprising:

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providing a liquid head (FIG. 1, element 10), including:

a plurality of nozzle orifices (FIG. 3, element 22A, and column 6, line 19-22)

a plurality of pressure generation chambers associated with the nozzle orifices (FIG. 3, element 27, and column 7, line 38-39)

a plurality of piezoelectric vibrators (FIG. 3, element 17)

a correction data (in term of "the print data comprises four bits") (column 6, line 51-53 and column 7, line 1-10) storage (in term of "RAM") (column 5, line 29-32) for storing correction data that controls the amount of liquid jetted from the identified nozzle orifices by selecting a proper drive signal in a single jetting cycle. Therefore, based on this correction data, the displacement behavior of a piezoelectric vibrator associated with the identified nozzle orifices is adjusted

a drive signal generator (FIG. 1, element 8) provides N drive signals (in term of "four pulses") for driving the piezoelectric vibrators in a single jetting cycle (in term of "print period") (FIG. 4). The drive signals respectively having different liquid jetting energy from each other (FIG. 4, the first and second pulses have different amplitude and width)

a drive signal supplier (FIG. 1, element 16) for selecting and applying M signals (one or at least two) from the N drive signals to the piezoelectric vibrators within the single jetting cycle (FIG. 9, column 14, line 43-52), where the period of the single jetting cycle (in term of "print period") is long enough to substantially damp residual vibration of a meniscus of the liquid in the nozzle orifice due to jetting by the last drive signal (column 15, line 18-20, and line 28-30)

FIG. 8
Print data
D1-D4
it selects
a proper
drive signal

claim 2

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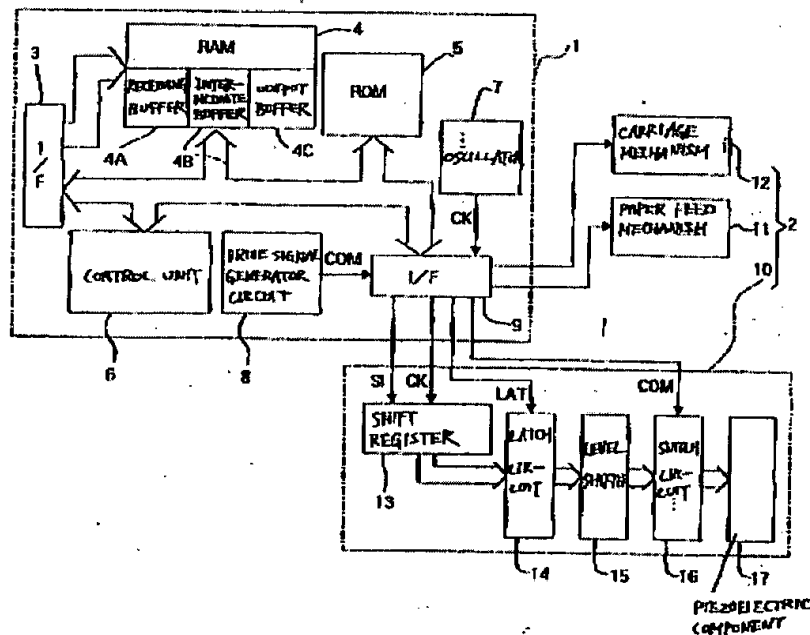
the selected drive signals are applied at different intervals within the single jetting cycle (FIG. 9)

Kitahara does not disclose the providing ID data provides the ID data for identifying the respective nozzle orifices.

However, Barbehenn et al. discloses a ID data storage provides the ID data for identifying the respective nozzle orifices (column 3, line 43-53).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to include the ID storage (column 3, line 43-53) for providing the ID data of the respective nozzle orifices into the design of Kitahara because this increases the control of proper ink volume, ink drop velocity, missing nozzles, and various other manufacturing tolerances or defects for driving an array of nozzle orifices (column 2, line 2-8).

Fig. 1

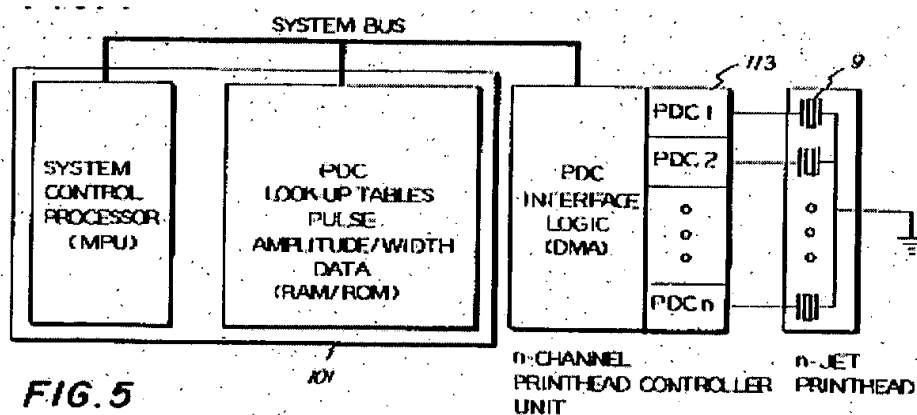


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4. Claim 11 rejected under 35 U.S.C. 103(a) as being unpatentable over Kitahara et al. (EP0827838) in view of Barbehenn et al. (U.S. 5363134) as regarded to claim 8, and further in view of Bain (U.S. 4521786).

Kitahara et al. and Barbehenn et al. disclose the claimed invention as discussed above, except a plurality of drive signal generators provide the different drive signals.

However, Bain discloses a system including a plurality of drive signal generators (in term of "programmable driver/control (PDC)") (FIG. 4 and FIG. 5, element 113) provide the different drive signals.



Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to substitute a plurality of drive signal generator for providing different drive signals into the design of Kitahara et al. in view of Barbehenn et al. The motivation would be that the parameters such as velocity and volume of a droplet are controlled by programming software at each drive signal generator for each different nozzle orifice as taught by Bain to obtain optimal operation of the printhead (column 1, line 46-61).

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5. Claim 12 rejected under 35 U.S.C. 103(a) as being unpatentable over Kitahara et al. (EP0827838) in view of Barbehenn et al. (U.S. 5363134) as regarded to claim 2, and the explanation below.

Since the phrase "can be divided" does not clearly point out the result of the division be an integer or a real number, it makes the claimed invention be so broad that for one having ordinary skill in the art be able to define specific limitations.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM S NGUYEN whose telephone number is (703)305-3342. The examiner can normally be reached on 7:00AM - 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JOHN E BARLOW can be reached on (703)308-3126. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-3431 for regular communications and (703)305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

LN

February 7, 2002


John Barlow
Supervisory Patent Examiner
Technology Center 2800